WHAT IS CLAIMED:

1.   A method for controlling heating of an oxygen sensor for an engine of a vehicle on the basis of a heating factor having a lower limit, the method comprising:

setting the heating factor as a base value upon starting of the engine;

calculating an average voltage of the oxygen sensor;

determining if the average voltage of the oxygen sensor is less than a predetermined reference voltage;

decreasing the heating factor when the average voltage of the oxygen sensor is less than the reference voltage; and

adjusting the lower limit of the heating factor on the basis of the decreased heating factor, a P-jump delay time calculated based on an output voltage of the oxygen sensor, and at least one diagnosis index of the oxygen sensor.

2.   The method of claim 1, wherein the step of adjusting the lower limit of the heating factor comprises:

determining if a first predetermined condition regarding the heating factor is satisfied;

determining if a second predetermined condition regarding the P-jump delay time and the at least one oxygen sensor diagnosis index is satisfied; and

resetting the lower limit of the heating factor to the base value when the first and second predetermined conditions are satisfied.

3.   The method of claim 2, wherein the first predetermined condition comprises the heating factor being less than a reference factor that is below the base value.

4.   The method of claim 3, wherein the predetermined reference factor is about 0.65.

5.   The method of claim 2, wherein the step of determining if a second predetermined condition is satisfied comprises:

calculating the P-jump delay time on the basis of the output voltage of the

oxygen sensor; and

calculating the diagnosis index of the oxygen sensor,

wherein the second predetermined condition is satisfied when the P-jump delay time is greater than a predetermined reference delay time or the diagnosis index of the oxygen sensor is greater than a first predetermined ratio of a predetermined threshold index.

6. The method of claim 5, wherein the first predetermined ratio is about 50%.

7. The method of claim 2, further comprising:

determining if a third predetermined condition regarding the oxygen sensor diagnosis index and a coolant temperature of the engine is satisfied; and

maintaining the lower limit of the heating factor as a predetermined factor value for a predetermined period when the third predetermined condition is satisfied, the predetermined factor value being greater than the base value.

8. The method of claim 7, wherein the predetermined factor value is about 1.25 and the predetermined period is about 45 seconds.

9. The method of claim 7, wherein the third predetermined condition comprises:

the oxygen sensor diagnosis index being greater than a second predetermined ratio of the predetermined threshold index; and

the coolant temperature of the engine being less than a predetermined reference temperature.

10. The method of claim 9, wherein the second predetermined ratio is about 80%.

11. The method of claim 1, wherein the reference voltage lies between rich and lean regions of an air/fuel ratio.

12. The method of claim 11, wherein the reference voltage is about 2.5V or about 0.5V.